

Geologic Map of the Northwest Side
of the Kodiak Islands, Alaska

by
William Connelly and J. Casey Moore
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DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS: Consist of glacial and stream deposits inland and beach sediments along coast; undifferentiated. Quaternary.

KODIAK FORMATION: Medium to thickly bedded arkosic wacke and shale with occasional beds of pebbly conglomerate (Moore, 1969); flute casts and complete Bouma sequence in light deposition beds; turbidity currents below wave base; strikes northeast and dips steeply northwest; generally deformed into tight large-scale folds and locally into broken formation; contains sparse Upper Cretaceous (Maestrichtian) pelecypods *Inoceramus luroensis* (Jones and Clark, 1973); metamorphism reaches greenschist facies; juxtaposed beneath the Uyak Complex along the Uyak thrust; tectonically bound bodies of Kodiak formation lithology locally are included in Uyak Complex near Uyak thrust -- *Inoceramus* prisms are contained in one such body (fossil locality F5); correlates with Shumagin Formation to southwest on Shumagin and Sanak Islands (Burk, 1965; Moore, 1973) and with Valdez Group to northeast on Kenai Peninsula (Clark, 1973; Budnik, 1974).

TERRANE OF CAPE CURRENT: Informally named unit consisting principally of medium to thick-bedded arkosic and lithic sandstone dipping steeply northwest (Connelly, 1976); contains occasional sections of vesicular pillow lava and pillow breccia; slightly metamorphosed and moderately deformed; includes two bodies of red pelagic limestone containing coccoliths of indeterminate age and Upper Cretaceous (Turonian-Santonian?) foraminifers (locality F4).

TERTIARY (?) PLUTON: Fine-grained biotite quartz monzonite, probably related to the Kodiak batholith; age uncertain, but probably Paleocene.

UYAK COMPLEX OF MOORE AND CONNELLY (1977): Lithologically chaotic assemblage of gray chert and argillite wacke, pillowed and massive chertolitic greenstone (Hill and Gill, 1976); radiolarian chert, and minor limestone (Connelly, 1976); most is tectonic melange with cataclastic foliation dipping steeply northwest (see summary of structural data on Sheet II); metamorphosed to prohibit-pumilite facies; fossils recovered include mid-Permian (pre-upper Guadalupian) fusulinids of Tethyan affinity (localities F7 and F8) upper Valanginian to upper Aptian radiolaria *Thamaria conica* and *Archaeodictyonites* sp. (locality F9), upper Triassic (lower Spangulophoria (locality F10), Upper Jurassic or lower Cretaceous radiolaria *Archaeodictyonites* sp. (locality F6), upper Valanginian radiolaria *Parvicinctus* (locality F11), *Thamaria conica*, and *Archaeodictyonites* cf. *A. valangini* (locality F12), and upper Valanginian to Aptian *Thamaria conica*, *Parvicinctus*, and *Archaeodictyonites* (locality F13); probably correlates with McHugh Complex near Anchorage and unnamed units on southern Kenai Peninsula (Clark, 1973; Moore and Connelly, 1976, 1977; Martin, 1975).

Gabbroic and ultramafic rocks: Includes layered gabbro, clinopyroxenite, dunite, and plagioclase peridotite (Hill, 1975, 1976); no harzburgite or sheeted-dike complexes have been observed; generally occur as tectonically bound slabs along northeast side of Uyak Complex.

SCHIST TERRANE OF KODIAK ISLANDS: Informally named unit consisting of thinly layered and complexly folded quartzite schist, greenschist, crossite-epidote schist (blueschist), and epidote amphibolite, but also includes calc-silicate rock and amphibolite adjacent to Afognak pluton (Carden and others, in press; Connelly, 1976). K-Ar ages from white mica and crossite extracted from schist at Malina Bay are respectively 187.6 ± 5.6 and 176.6 ± 5.1 m.y.B.P., and white mica from schist at east Raspberry Strait is 182.1 ± 5.8 m.y.B.P.; this schist terrane correlates with a similar blueschist terrane on southern Kenai Peninsula (Forbes and Langhorne, 1975).

AFOGNAK PLUTON: Hornblende diorite and hornblende quartz diorite; generally occurs between the schist terrane or Uyak Complex and the structurally overlying Shuyak Formation; igneous, aplitic dikes, and high-temperature metamorphism locally well-developed along contact with the schist terrane and Uyak Complex; yields K-Ar hornblende ages of 183.7 ± 5.5 and 188.4 ± 5.7 m.y.B.P. from Raspberry Island, 192.7 ± 5.7 m.y.B.P. from east Foyle Bay (Carden and others, in press), and 187 ± 14 m.y.B.P. from Barren Islands (Cowan and Boss, in press).

MAFIC DIKES AND SILLS: Petrographically appear to have diabasic composition; intrude sedimentary member of Shuyak Formation; no obvious thermal metamorphic aureoles at margins; age uncertain, but younger than, or in part contemporaneous with, Shuyak Formation.

SHUYAK FORMATION OF MOORE AND CONNELLY (1977)

Sedimentary member: Volcaniclastic sequence consisting of thin to medium-bedded lithic sandstone with less conglomerate, argillite, and siliceous tuff (Connelly, 1976); rich in primary andesitic material; flute casts and complete Bouma sequences indicate deposition by turbidity currents below wave base; either broadly folded or homoclinally dipping southeast; metamorphism reaches prohibit-pumilite facies; in fault contact with, but inferred to overlie, the volcanic member; contains Upper Triassic (Norian) pelecypods *Balochia* cf. *B. holorica* (localities F1, F2, F3); correlates to northeast with lithologically similar rocks on southern Kenai Peninsula (Martin, 1975) and to the northwest with rocks on the Alaska Peninsula at Duane Bay and in the Lake Ilizama-Tanishak Bay area (Burk, 1965; Detterman and Hartsock, 1966).

Volcanic member: Consists mainly of vesicular pillowed greenstone, but locally contains beds of pillow breccia, agglomerate, tuff, and argillite; unfossiliferous; greenstone is chertolitic in composition (Hill and Gill, 1976); structurally overlies the Kodiak schist terrane and Uyak Complex but is generally separated from them by Afognak pluton.

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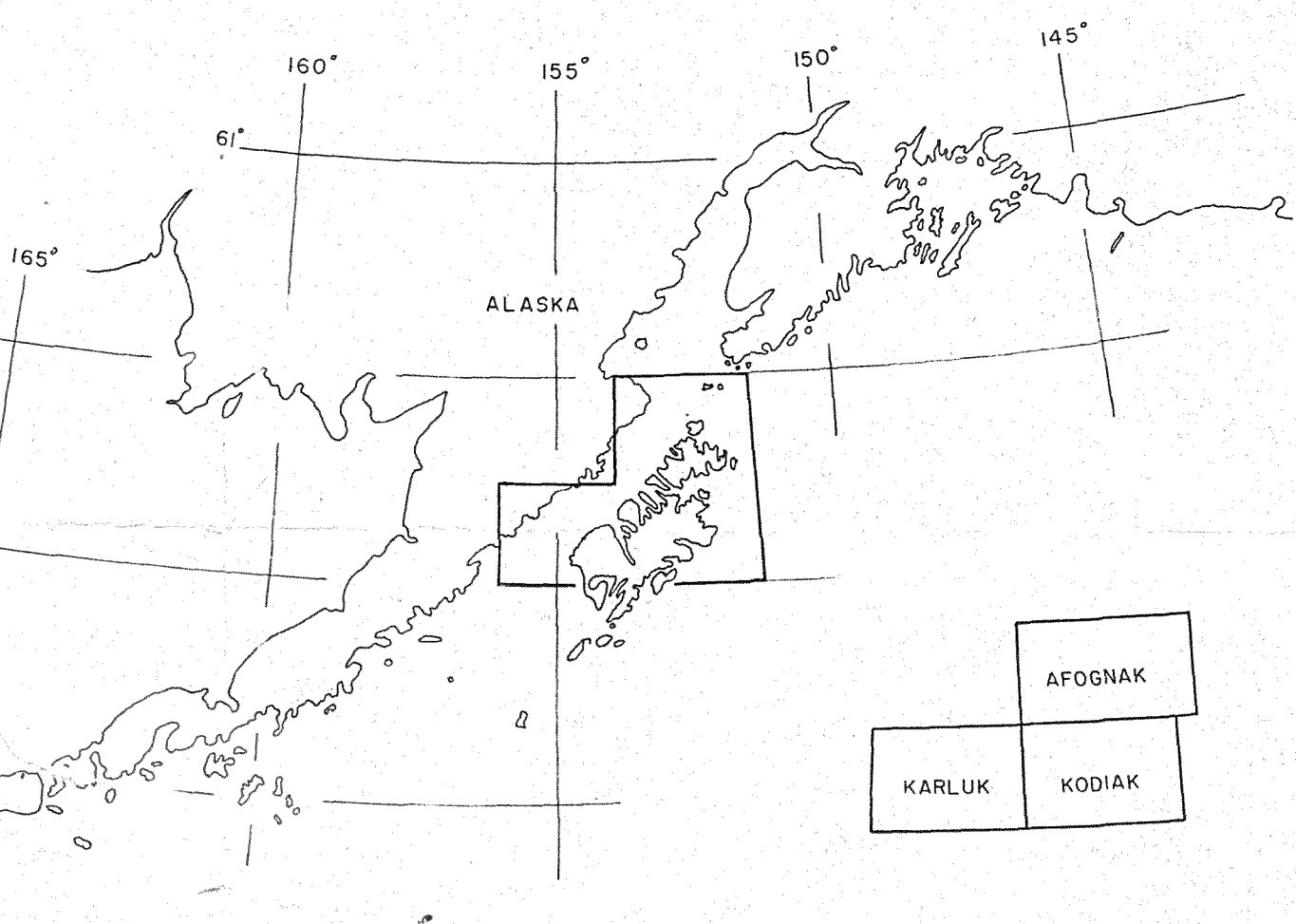
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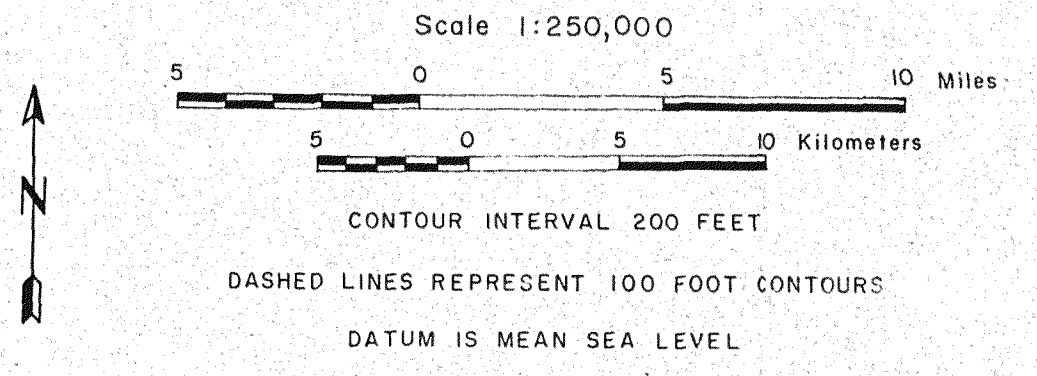
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EXPLANATION

- Qs Surficial deposits Undifferentiated.
- Kk Kodiak Formation Marine turbidite sequence.
- Kc Terrane of Cape Current Massive marine sandstone with minor pillow lava, agglomerate, and pelagic limestone.
- Tqm(?) Tertiary (?) pluton Biotite quartz monzonite
- uMzu Uyak Complex * uMzu, lithologically chaotic assemblage of chert, argillite, wacke, greenstone, and limestone. uMzuu, gabbroic and ultramafic rocks.
- IJs Schist terrane of Kodiak Islands. Complexly folded schists; includes blueschist.
- IJd Afognak pluton Quartz: diorite and diorite.
- Tss Shuyak Formation * Tss, sedimentary member; volcanic turbidites, conglomerate, argillite, and tuff. Tsv, volcanic member; pillowed greenstone with minor pillow breccia and tuff.

- Contact Includes both intrusive and tectonic contacts; dashed where approximately located.
- Fault Approximately located except at coastline; dotted where concealed.
- Fault Existence uncertain; approximately located except at coastline; dotted where concealed.
- Thrust fault (Uyak thrust) Approximately located except at coastline; dotted where concealed.
- Strike and dip of upright beds
- Inclined Vertical Strike and dip of calciclastic foliation
- Inclined Vertical Strike and dip of metamorphic and plutonic foliation.
- F7 Fossil localities See text for descriptions.
- Index for stereographic plots summarizing structural data from subareas in the Uyak Complex.



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